

Remarks

Reconsideration and allowance of this application, as amended, are respectfully requested.

The claims have been editorially amended in general to more fully comply with U.S. practice. Claim 106 has been canceled. Claims 42-105 and 107-117 are now pending in the application, with claims 51, 52, 54, 95-99, 108, 109, and 112-116 withdrawn from consideration as being directed to a non-elected invention. Claim 42 is independent. The rejections are respectfully submitted to be obviated in view of the amendments and remarks presented herein. No new matter has been introduced through the foregoing amendments.

Claim 42 has been amended to even more specifically define the subject matter of the instant process. Instant claim 42 defines a process for "the production of a flexible unbonded offshore pipe having at least one polymer layer with a thickness of about 4 mm." The process includes, *inter alia*, "shaping said polymer layer from a polymer material by extrusion in an extrusion station and cross-linking said extruded polymer material." Support for the instant recitation is found at, for example, specification page 13, lines 31-36. Entry of each of the amendments is respectfully requested.

35 U.S.C. § 103(a) - Sjöberg, Hardy, and Hirokazu or Kent

Claims 42-48, 53, 55-93, 100-106, and 117 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No.

6,106,761 to Sjoberg et al. (hereinafter "Sjoberg") in view of U.S. Patent No. 5,918,641 to Hardy et al. ("Hardy") and either of U.S. Patent No. 3,513,228 to Hirokazu et al. ("Hirokazu") or U.S. Patent No. 2,528,523 to Kent.

The rejection of claims 42-48, 53, 55-93, 100-106, and 117 based on Sjoberg, Hardy, and Hirokazu or Kent is respectfully traversed. For at least the following reasons, the combined disclosures of Sjoberg, Hardy, and Hirokazu or Kent would not have rendered obvious Applicant's claimed invention.

There is simply no teaching in any of Sjoberg, Hardy, and Hirokazu or Kent that would have led one to select the references and combine them, let alone in a way that would produce the invention defined by Applicant's claim 42.

Sjoberg discloses a method of producing pipes with a size on the order of 15 mm in diameter and 2.5 mm in thickness (column 6, lines 37-42) in order to obtain a good surface finish (column 3, lines 8-15). Clearly, Sjoberg's pipes are "stand alone" polymer pipes having no additional layers. The pipes are made by extruding and cross-linking a polymer using infrared radiation in which the absorption peaks for the polymer have been eliminated so that heavy local surface heating is avoided.

Hardy discloses a flexible pipe having an inner liner of polyethylene ("PE") cross linked by hydrolysis.

Hirokazu and Kent each disclose traditional methods of cross linking PE using peroxide and heat activation.

Hardy, however, specifically teaches away from the examiner's asserted combination of references. Hardy discloses (column 2, lines 28-37) that chemical cross linking using peroxides is a technology which *is not applicable to the flexible offshore pipe technology*:

It is known from the European Patent Application 83400256 published under the No. 0,087,344 to improve the mechanical behavior of polyethylenes, for large diameter tubes, by chemical cross linking using peroxides. The chemical cross linking method requires large quantities of heat. It has never been able to be implemented on an industrial scale for producing tubes made of polyethylene for high-performance flexible structures *insofar as the increase in temperatures required for obtaining the cross linking does not enable the tubes to support their own weight.* (Emphasis added)

For at least two reasons, therefore, Hardy clearly teaches the person having ordinary skill in the art that cross linking of PE using peroxides is not applicable to the flexible offshore pipe technology. First, the process has never been able to be implemented on an industrial scale for producing tubes made of PE for high-performance flexible structures. Second, the increase in temperature required to obtain the cross linking results in a tube that cannot support its own weight.

Nonetheless, the examiner asserts that it would have been obvious to combine the method of Sjoberg with the pipe of Hardy. Furthermore, the examiner implies that since Sjoberg is employed as the primary reference and Hardy is employed as the secondary

reference, the teaching against using peroxide cross linking in Hardy is irrelevant.

Applicant respectfully disagrees. The teaching of Hardy is not irrelevant because the claimed invention must be considered as a whole. That is, as required by MPEP § 2142:

To reach a proper determination under 35 U.S.C. § 103, the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention "as a whole" would have been obvious at the time to that person.

Applicant respectfully submits that the examiner has not, as is required, put himself in the place of the person of ordinary skill in the art and made the analysis based on all factual information. One of ordinary skill in the art would know that a flexible unbonded offshore pipe is a special type of pipe (as explained in the instant specification) that includes a polymer layer for sealing (often called an inner liner) and two or more helically wound wires surrounding the polymer layer. Such flexible unbonded offshore pipe should be able to transport aggressive fluids, to withstand *high pressures, temperatures and variations thereof* during use. Furthermore, such pipe should have a long lifetime, which in offshore guidelines is typically specified to be 20 years or longer. In view of the service environment, the consequence of a leak of a polymer layer in such a pipe can be *catastrophic*.

Therefore, based on Hardy's teaching against using peroxide plus heat for cross linking the polymer layer of the flexible unbonded offshore pipe, the skilled person would not even consider using the method for producing the small stand alone pipes of Sjoberg.

In other words, combining the method of Sjoberg with the pipe of Hardy would not lead to a predictable result. That is, the skilled person would predict the pipe to collapse. It would not have been obvious to try because the skilled person would not expect the method to work. And finally, Hardy has a clear teaching against using the peroxide plus heat method in the production of flexible unbonded offshore pipes.

Therefore, the combined disclosures of Sjoberg, Hardy, and Hirokazu or Kent would not have rendered obvious the invention defined by claim 42. Claims 43-48, 53, 55-93, 100-106, and 117 are allowable because they depend, either directly or indirectly, from claim 42, and for the subject matter recited therein.

35 U.S.C. § 103(a)

Claims 49, 50, 94, 107, 110, and 111 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sjoberg in view of Hardy and either of Hirokazu or Kent, and further in view of WO 99/67560 of Procida et al. ("Procida '560"). Claims 78-81 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over

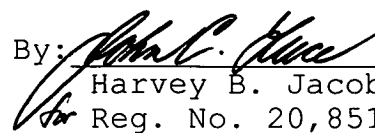
Sjoberg in view of Hardy and either of Hirokazu or Kent, and further in view of WO 01/00381 of Heino.

The rejections of claims 49, 50, 94, 107, 110, and 111 and of claims 78-81 are similarly traversed. All of the aforementioned rejected claims depend, either directly or indirectly, from claim 42. Claim 42 is allowable for at least the reasons explained above. Regardless of what Procida '560 and Heino may disclose, their teachings fail to rectify any of the above-described deficiencies of the asserted Sjoberg, Hardy, and Hirokazu or Kent combination. Accordingly, claims 49, 50, 78-81, 94, 107, 110, and 111 are allowable because they depend from claim 42, and for the subject matter recited therein.

In view of the foregoing, this application is now in condition for allowance. If the examiner believes that an interview might expedite prosecution, the examiner is invited to contact the undersigned.

Respectfully submitted,

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